COOK-JOYCE INC.
ENGINEERING AND CONSULTING
812 WEST ELEVENTH
AUSTIN, TEXAS 78701-2000
(512) 474-9097 FAX (512) 474-8463

4 April 2007

Mr. Fred Duffy, Project Manager
Industrial and Hazardous Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality
P. O. Box 13087, MC 130
Austin, TX 78711-3087

Re: Additional Information for Aquifer Exemption Request
Corsicana Technologies, Inc.
Navarro County, Texas
WWC No. 12001731-2
RN100756287 / CN600442883

Dear Mr. Duffy,

With respect to your March 23, 2007 letter requesting additional information for the above referenced Aquifer Exemption Request, Cook-Joyce, Inc. has prepared the attached response document. We are submitting one original and two copies of this document in addition to a new signature page, as per your request.

Should you have any further questions regarding this exemption request, please feel free to contact Doug Granger at 512-474-9097 or Randy Larkin at 512-345-6750.

Sincerely,

Doug Granger, P.G.

Randy Larkin, P.G.

DG:RL:nn

Enclosure

Fax Transmittal Memo	# of Pages 4
To: Jose Torres	From:
Co.:	Co.:
Dept.:	Phone #
Fax #	Fax #

RCFX14

CTI\FINAL\97147.03\
L070404_DUFFY.DOC

Modeling the fault caused little change

Additional Information for Aquifer Exemption Request
Corsicana Technologies, Inc., Navarro County, Texas
WWC No. 12001731-2
RN100756287 / CN600442883

1. Please model the plume assuming the Mildred Fault is a no-flow boundary (sealing fault). Explain the differences (lateral extent, shape, etc of the plume) between the results of this model and the previous model which assumed infinite lateral extent.

RESPONSE:

New SWIFT model runs were used to model the possible impact on the plume if the Mildred Fault were sealing and a no-flow boundary. The plume location in the submitted Aquifer Exemption document, dated September 2006, was calculated using SWIFT runs CRSCAN20.DAT (low density injectate), CRSCAN21.DAT (high density injectate), and CRSCAN22.DAT (high density injectate with WDW-117 injection). The new SWIFT run, CRSCAN23.DAT, was based on the low density injectate run CRSCAN20.DAT. This is the most likely scenario for injection because the proposed waste stream will have a low average density. A second new SWIFT run, CRSCAN24.DAT, was based on the high density injectate run CRSCAN21.DAT.

The Mildred Fault is located at the extreme southeast edge of the AOR approximately 2.5 miles from the location of WDW-394. The SWIFT finite difference grid length was reduced in the y direction so that the downdip edge of the model is 2.5 miles from the well. The downdip side of the model (x = 1,148; y = 162) was then designated as a no-flow boundary. The remaining sides of the model remained open to flow. This was the only change made to the original CRSCAN20.DAT and CRSCAN21.DAT input files.

Figure 1 shows the new run plume contours for CRSCAN23.DAT overlain on the previous contours for CRSCAN20.DAT. As in the submitted aquifer exemption document, the extent of the plume is defined by the C/Co = 0.001 contour. The no-flow boundary causes the plume to be moved slightly updip from the previous run because flow is restricted in the downdip direction. The difference in the new calculated plume location is approximately 150 feet from the edge of the previous run. The same results were obtained for the new high density run CRSCAN24.DAT, so only the results for CRSCAN23.DAT are shown in Figure 1.

2. Does the Mildred Fault have a significant role in the results of the two models?

RESPONSE:

The Mildred fault does not have a significant impact in the results between the model that assumed infinite extent and the model that includes the fault as a no-flow boundary. In the new model, the downdip side of the model (x = 1,148; y = 162) is placed approximately 2.5 miles from WDW-394 and is designated as a no-flow boundary. The no-flow boundary causes the plume to be moved slightly updip from the previous run because flow is restricted in the downdip direction. The difference in the calculated plume location is

NO significant COI

approximately 150 feet as shown on Figure 1. This difference is not considered to be significant.

3. Using geologic parameters of WDW394, please calculate/revise the cone of influence (COI). Assign the top of the perforated section (2960 ft. KB), as the top of the injection interval.

RESPONSE:

The new high density injectate run, CRSCAN24.DAT was used to revise the cone of influence (COI) calculation. This is because the pressure increase is slightly higher with the higher injectate density. Figure 2 shows contours of the pressure increase due to 30 years of injection at 50 gpm in WDW-394.

From the September 2006 Aquifer Exemption Request document (Table 5), the initial pressure in the injection interval sand was 1132 psi at 2982 feet below Kelly bushing (BKB). The pressure gradient for the exempt aquifer is 0.430347 psi/ft (61.97 lb/ft^3/ 144 in^2/ft^2). Using this gradient to convert the pressure measurement to the top of the perforated section yields a final shut-in pressure of 1,122.5 psi at 2,960 feet BKB at WDW-394:

$$1122.5\ psi_{2960\ BKB} = 1132\ psi - [(2982\ ft\ BKB - 2960\ ft\ BKB)(0.430347\ psi/ft)]$$

The Cone of Influence is determined as the pressure increase required to move a column of 9 lb/gallon mud as follows:

COI pressure = (pressure of 9.0 ppg fluid column - 50 feet fallback) - pressure at top of injection reservoir.

1. The top of the injection zone/injection reservoir is 2920 feet BKB. The pressure at the top of the injection zone is:

$$1105.3\ psi_{2920\ BKB} = 1132\ psi - [(2982\ ft\ BKB - 2920\ ft\ BKB)(0.430347\ psi/ft)]$$

The following values were used in the COI calculation:

2. Pressure of 9.0 ppg fluid column:

P_{9ppg} = (2920 feet - 50 feet)(9 lb/gal)(7.4805 gal/ft^3)(1 ft^2/144 in^2) = 1341. 8 psi

3. COI pressure = 1341.8 psi – 1105.3 psi = 236.5 psi

This is the pressure increase in the reservoir that would be required to move a mud column in a borehole. From Figure 2, it can be seen that this pressure is never exceeded beyond the borehole location. Therefore, the revised modeling indicates that there is no significant cone of influence for WDW-394, even if the Mildred fault is considered to be sealing.